WHAT IS CLAIMED IS:

1. A method for the analysis of a sample comprising:
   (a) applying a sample to a deposited thin film; and
   (b) analyzing said sample by a detection means.

2. A method according to Claim 1 wherein said sample is selected from the group consisting of: organic chemical compositions, inorganic chemical compositions, biochemical compositions, cells, micro-organisms, peptides, polypeptides, proteins, lipids, carbohydrates, nucleic acids, or mixtures thereof.

3. A method for sample analysis according to Claim 2 wherein said sample is obtained from a micro fluidic system, a micro chromatographic system, a high-throughput isolation and preparation system, or combination thereof.

4. A method according to Claim 1 wherein said deposited thin film is selected from the group consisting of: continuous film, a column structure film, a columnar-void film, or a mixture thereof.

5. A method according to Claim 4 wherein said deposited thin film is a columnar-void film comprising (a) a network of columnar-like units in a continuous void; and (b) a substrate to which said network of columnar-like units is adhered.

6. A method according to Claim 5, wherein said substrate is a solid phase composition comprising silicon, glasses, plastics, polymers, metals, ceramics or mixtures thereof.

7. A method according to Claim 4 further comprising the step of selecting said film using criteria selected from the group consisting of: laser-light reflection, optical absorption, species absorption and desorption, ambient absorption and desorption, and combinations thereof.

8. A method according to Claim 5, wherein the spacing and height, and physical and chemical composition of said network of columnar-like units are varied by adjustment of the deposition parameters selected from the group consisting of:

voltage, current, voltage between plasma and substrate, substrate temperature, plasma power, process pressure, electromagnetic field in the vicinity of the substrate, deposition gases and flow rates, chamber conditioning, substrate surface, and combinations thereof.

9. A method according to Claim 8 wherein said deposited thin film is subsequently modified by oxidation, silicidation, etching, ion implantation or mixture thereof.

10. A method according to Claim 4, wherein said film is physically or chemically modified, surface functionalized, or patterned.

11. A method according to Claim 10, wherein said film is patterned by photolithography, stamping, screen masking, printing or physical modification of said film or of a subsequently positioned material.

12. A method according to Claim 10 wherein said physical or chemical modification comprises reaction with or adherence with organic or inorganic compounds, cells, cell components, tissues, microorganisms and mixtures thereof.

13. A method according to Claim 1 wherein said detection means is selected from the group consisting of: light desorption mass spectroscopy, antigen-antibody recognition reaction, colorimetric detection, atomic force microscopy, spectrographic analysis, enzyme reaction detection, fluorescence detection means, optical detection means, radioactivity detection means, electrical detection means, chemical detection means, and combinations thereof.

14. A method according to Claim 13 wherein the detection means is laser desorption, time of flight mass spectroscopy.

15. A method according to Claim 14 wherein prior to detection, a signal enhancing agent is integrated with said sample.

16. A method according to Claim 15 wherein said signal enhancing agent is ammonium citrate.

17. A method according to Claim 1, wherein said sample is applied by either (a) adsorption from a solid, liquid or gas; or (b) direct application to the surface of said deposited thin film as a solid or liquid, or combination thereof.

18. A method according to Claim 17 wherein said sample is applied to said film directly from, or integrated with, a chemical, physical, or electrical separation means, or combination thereof.

19. A method according to Claim 18 wherein said separation means is selected from the group consisting of: liquid chromatography, gas chromatography, deposited thin film chromatography, gel, capillary or micro-capillary electrophoresis, or blotting.

20. A method according to claim 19 wherein said deposited thin film chromatography separation means further comprises:

(a) applying said sample to said deposited thin film

(b) allowing the analytes of said sample to migrate through or to interact with said deposited thin film thereby separating component analytes in said sample.

21. A method according to Claim 20 wherein the said deposited thin film is chemically or physically modified prior to said separation.

22. A method for selective adherence and detection of analytes in a sample comprising the steps of:

(a) applying a sample to said deposited thin film, whereby a particular analyte or analytes from said sample adhere to said deposited thin film; and

(b) selectively removing non-adherent analytes, and
analyzing said adherent analytes by a detection means.

23. A method according to Claim 22 wherein said sample is selected from the group consisting of: organic chemical compositions, inorganic chemical compositions, biochemical compositions, cells, micro-organisms, peptides, polypeptides, proteins, lipids, carbohydrates, nucleic acids, or mixtures thereof.

24. A method for sample analysis according to Claim 23 wherein said sample is obtained from a micro fluidic system, a micro chromatographic system, a high-throughput isolation and preparation system, or combination thereof.

25. A method according to Claim 22 wherein said deposited thin film is selected from the group consisting of: continuous film, a column structure film, a columnar-void film, or a mixture thereof.

26. A method according to Claim 25 wherein said deposited thin film is a columnar-void film comprising (a) a network of columnar-like units in a continuous void; and (b) a substrate to which said network of columnar-like units is adhered.

27. A method according to Claim 26, wherein said substrate is a solid phase composition comprising silicon, glasses, plastics, polymers, metals, ceramics or mixtures thereof.

28. A method according to Claim 26 further comprising the step of selecting said film using criteria selected from the group consisting of: laser-light reflection, optical absorption, species absorption and desorption, ambient absorption and desorption, and combinations thereof.

29. A method according to Claim 26, wherein the spacing and height, and physical and chemical composition of said network of columnar-like units are varied by adjustment of the deposition parameters selected from the group consisting of: voltage, current, voltage between plasma and substrate, substrate temperature, plasma power, process pressure, electromagnetic field in the vicinity of the substrate, deposition gases and flow rates, chamber conditioning, substrate surface, and combinations thereof.

30. A method according to Claim 29 wherein said deposited thin film is subsequently modified by oxidation, silicidation, etching, ion implantation or mixture thereof.

31. A method according to Claim 25, wherein said film is patterned by photolithography, stamping, screen masking, printing or physical modification of said film or of a subsequently positioned material.

32. A method according to Claim 25 wherein said film is modified to adhere said sample comprising peptides, proteins, polypeptides, nucleic acids, carbohydrates, lipids, or other chemical moiety.

33. A method according to Claim 32, wherein said film is modified to adhere prokaryotic or eukaryotic tissues, cells, or microorganisms.

34. A method according to Claim 33 wherein said cells proliferate, differentiate, and/or are maintained.

35. A method according to Claim 22 wherein said detection means is selected from the group consisting of: light desorption mass spectroscopy, antigen-antibody recognition reaction, colorimetric detection, atomic force microscopy, spectrographic analysis, enzyme reaction detection, fluorescence detection means, optical detection means, radioactivity detection means, electrical detection means, chemical detection means, and combinations thereof.

36. A method according to Claim 35 wherein the detection means is laser desorption, time of flight mass spectroscopy.

37. A method according to Claim 36 wherein prior to detection, a signal enhancing agent is integrated with said sample.

38. A method according to Claim 37 wherein said signal enhancing agent is ammonium citrate.

39. A method according to Claim 22, wherein said sample is applied by either (a) adsorption from a solid, liquid or gas; or (b) direct application to the surface of said deposited thin film as a solid or liquid, or combination thereof.

40. A method according to Claim 39 wherein said sample is applied to said film directly from, or integrated with, a chemical, physical, or electrical separation means, or combination thereof.

41. A method according to Claim 40 wherein said separation means is selected from the group consisting of: liquid chromatography, gas chromatography, deposited thin film chromatography, gel, capillary or micro-capillary electrophoresis, or blotting.

42. A method according to claim 41 wherein said deposited thin film chromatography separation means further comprises:

(a) applying said sample to said deposited thin film

(b) allowing the analytes of said sample to migrate through or to interact with said deposited thin film thereby separating component analytes in said sample.

43. A method according to Claim 42 wherein the said deposited thin film is chemically or physically modified prior to said separation.

44. A method for analyzing a chemical reaction comprising:

(a) applying a sample to a deposited thin film;

(b) allowing a chemical reaction to occur; and

(c) analyzing said chemical reaction by a detection means.

45. A method according to Claim 44 wherein said sample is selected from the group consisting of: organic chemical compositions, inorganic chemical compositions, biochemical compositions, cells, micro-organisms, peptides, polypeptides, proteins, lipids, carbohydrates, nucleic acids, or mixtures thereof.

46. A method for sample analysis according to Claim 45 wherein said sample is obtained from a micro fluidic system, a micro chromatographic system, a high-throughput isolation and preparation system, or combination thereof.

47. A method according to Claim 44 wherein said deposited thin film is selected from the group consisting of: continuous film, a column structure film, a columnar-void film, or a mixture thereof.

48. A method according to Claim 47 wherein said deposited thin film is a columnar-void film comprising (a) a network of columnar-like units in a continuous void; and (b) a substrate to which said network of columnar-like units is adhered.

49. A method according to Claim 48, wherein said substrate is a solid phase composition comprising silicon, glasses, plastics, polymers, metals, ceramics or mixtures thereof.

50. A method according to Claim 47 further comprising the step of selecting said film using criteria selected from the group consisting of: laser-light reflection, optical absorption, species absorption and desorption, ambient absorption and desorption, and combinations thereof.

51. A method according to Claim 48, wherein the spacing and height, and physical and chemical composition of said network of columnar-like units are varied by adjustment of the deposition parameters selected from the group consisting of: voltage, current, voltage between plasma and substrate, substrate temperature, plasma power, process pressure, electromagnetic field in the vicinity of the substrate, deposition gases and flow rates, chamber conditioning, substrate surface, and combinations thereof.

52. A method according to Claim 51 wherein said deposited thin film is subsequently modified by oxidation, silicidation, etching, ion implantation or mixture thereof.

53. A method according to Claim 47, wherein said film is physically or chemically modified, surface functionalized, or patterned.

54. A method according to Claim 53, wherein said film is patterned by photolithography, stamping, screen masking, printing or physical modification of said film or of a subsequently positioned material.

55. A method according to Claim 53 wherein said physical or chemical modification comprises reaction with or adherence with organic or inorganic compounds, cells, cell components, tissues, microorganisms and mixtures thereof.

56. A method according to Claim 44 wherein said detection means is selected from the group consisting of: light desorption mass spectroscopy, antigen-antibody recognition reaction, colorimetric detection, atomic force microscopy, spectrographic analysis, enzyme reaction detection, fluorescence detection means, optical detection means, radioactivity detection means, electrical detection means, chemical detection means, and combinations thereof.

57. A method according to Claim 56 wherein the detection means is laser desorption, time of flight mass spectroscopy.

58. A method according to Claim 57 wherein prior to detection, a signal enhancing agent is integrated with said sample.

59. A method according to Claim 58 wherein said signal enhancing agent is ammonium citrate.

60. A method according to Claim 44, wherein said sample is applied by either (a) adsorption from a solid, liquid or gas; or (b) direct application to the surface of said deposited thin film as a solid or liquid, or combination thereof.

61. A method according to Claim 60 wherein said sample is applied to said film directly from, or integrated with, a chemical, physical, or electrical separation means, or combination thereof.

62. A method according to Claim 61 wherein said separation means is selected from the group consisting of: liquid chromatography, gas chromatography, deposited thin film chromatography, gel, capillary or micro-capillary electrophoresis, or blotting.

63. A method according to Claim 62 wherein said deposited thin film chromatography separation means further comprises:

(a) applying said sample to said deposited thin film

(b) allowing the analytes of said sample to migrate through or to interact with said deposited thin film thereby separating component analytes in said sample.

64. A method according to Claim 63 wherein the said deposited thin film is chemically or physically modified prior to said separation.

65. A method according to Claim 44 wherein said chemical reaction involves components of said sample, or reaction with said sample or components thereof with the modified or unmodified thin film or ambient atmospheric reactants.